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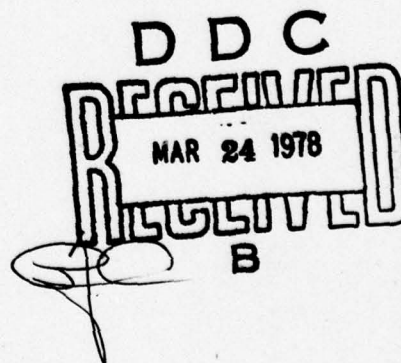
SELECTED BIBLIOGRAPHY OF
DISTURBANCE AND RESTORATION OF SOILS
AND VEGETATION IN PERMAFROST REGIONS
OF THE USSR (1970-1976)

Martha Andrews

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March 1977

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COLD REGIONS RESEARCH AND ENGINEERING LABORATORY
HANOVER, NEW HAMPSHIRE

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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This compilation of literature published in Russian since 1970 comprises 898 bibliographic citations relating to disturbance and restoration of soils and vegetation. Seventy-five per cent of these were found by a manual search of CRREL Bibliography vols. 25-30; the others were obtained through off-line searches from the relevant computerized data bases and personal files. Only one of these data bases, that of the National Agricultural Library, is shown to be of significance in providing a valuable checking source. The literature is discussed in chronological fashion, with general statements followed by highlights of each year's contributions (with three tables and two appendices for amplification). The years 1972 and 1973 produced the most publications, and by 1975 there was | | | |

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20. Abstract (cont'd)

a noticeable lag in pickup of publications by the indexing services. A trend is apparent from a reconnaissance and description approach in earlier papers toward an integrated ecosystem approach in more recent publications. Certainly, increased consciousness of the effects of disturbance on the permafrost environment, and the importance of restoration and preservation of these environments, are reflected in the recent literature, particularly in symposium proceedings.

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PREFACE

This bibliography was prepared by Martha Andrews, Research Bibliographer, Institute of Arctic and Alpine Research, University of Colorado. The work was funded by DA Project 4A161102AT24, Research in Snow, Ice and Frozen Ground, Scientific Area 02, Cold Regions Environmental Interactions, Work Unit 002, Cold Regions Environmental Factors; and by DA Project 1Z865803M761, Technical Information Analysis Centers (Cold Regions Information Analysis Centers). The project was under the direction of Dr. Jerry Brown, who offered much advice and many materials. Library facilities at INSTAAR, the University of Colorado, and the U.S. Army Cold Regions Research and Engineering Laboratory were used. Eunice Salisbury, CRREL librarian, provided much assistance with CRREL Bibliography materials, and Nancy Dumont, assistant librarian at CRREL, spent many hours developing search strategies and aiding with computer searches. The Institute of Quaternary Studies and the Dept. of Geological Sciences, University of Maine at Orono, kindly furnished space and equipment during the final preparation of the bibliography.

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SELECTED BIBLIOGRAPHY OF DISTURBANCE AND RESTORATION
OF SOILS AND VEGETATION IN PERMAFROST
REGIONS OF THE USSR (1970-1975)

by

Martha Andrews

Introduction

Soils and vegetation may be disturbed naturally or through human contact. Natural disturbance includes damage by fire, insects and erosion, with thermal erosion of permafrost a significant factor. Human disturbance is varied, road building, fire control, mining, oil spills, off road vehicles, logging and air pollution being the major culprits. Disturbance from any source causes existing vegetation to be damaged, killed and/or removed, and soils to change in moisture content, density, nutrient status, aeration and thaw depth.

Restoration or recovery of the damaged or disturbed ecosystem can also be either natural or man-induced. Revegetation and restoration of the disturbed site to its natural state may be partially or entirely successful, depending on many factors. Protection of sites in danger of disturbance may prevent both the disturbance and the need for restoration.

This bibliography of Russian literature covers the years from 1970 through the first half of 1976. Since the concepts of disturbance and restoration are relatively new as subjects of intensive study, the boundaries of the literature search in the earlier years were expanded to include selected literature concerning soils and plant ecology in both arctic and alpine areas which might relate to the desired subjects. In addition to the scarcity of disturbance and restoration studies in the earlier literature, there is a time lag among subject headings used in bibliographic indexing, i.e. the indexers tend to fit anomalous items into the existing subject thesaurus until it becomes evident that a new area of research has become established and is producing enough items to be indexed by new terms. Therefore, some earlier works may be lost temporarily in this manner to the person searching the standard bibliographies.

This Special Report is to be followed in 1977 by a complementary bibliography and report covering literature on the disturbance and restoration of soils and vegetation in permafrost regions of North America. The Russian literature will be updated at that time also.

CRREL Bibliography Search

The major body of this bibliography has been culled from volumes 25-30 of the CRREL Bibliography on Cold Regions Science and Technology, CRREL Report 12. The CRREL bibliography naturally provides the best reference in English to the Russian literature in fields appropriate to the CRREL mission. Only items published during or after 1970 have been included. The language used in these publications is restricted to Russian with the exception of some English translations and some English language summaries of recent symposia including Russian

materials. One or two items in Japanese about Yakutia have also been included. The area within the Soviet Union dealt with is wherever permafrost exists, either in a continuous or discontinuous condition. This large area includes zones variously defined as arctic, subarctic, tundra, taiga, alpine and subalpine.

In searching the CRREL bibliographies, I began by devising a list of subject headings used in them which I thought appeared relevant (Table I) and from which I started to trace references. It quickly became apparent that to search the volume of material involved, it would be much faster to scan each citation in its entirety. This of course meant scanning approximately 4000 citations for each volume of the CRREL bibliography, which was done at a rate of some 600 items per hour. Each item was marked, and appropriate subject headings were selected from those already selected by the original indexer of the publication. This aspect of selectivity in bibliographic work is important to emphasize. The experience and judgment of the bibliographers must be trusted as there is no quantitative or objective approach possible in indexing.

Main entry cards and subject-headed copies were made of the 678 items chosen. The subject index to this bibliography was not continued after vol. 28. This was due to the growing size of the bibliography which made me question whether a user would approach his own search through a regular subject index, or whether another kind of breakdown would be more useful. For the purposes of this report, it has been decided to discuss the references in a chronological fashion. Appendix I lists the authors publishing in each year to show the scope of each year's contributions and the development of key researchers in the field. The reader is referred to Appendix II for full citations, arranged alphabetically for the entire period (1970-1976).

In the subject indexes to volumes 25 and 26 of the CRREL bibliography very few terms were used to denote natural disturbance (thermokarst being one) and probably the only one denoting human disturbance was "environmental impact." By volume 27 "damage" was being used; volume 29 introduced "protection" (of natural environments) and included "human factors," "forest fires," and "revegetation." Reforestation had been used earlier. "Disturbance" has not been used and probably should be used in addition to "damage," which also includes damage to structures. "Restoration" or "recovery" should be used in addition to "revegetation," as for soil recovery, etc.

Material Not Yet Entered in the CRREL Bibliography

A certain number of items added to the bibliography came from personal materials in the office of Dr. Jerry Brown of CRREL. The bulk of these consisted of items for future addition or expansion (i.e. content analysis) in the CRREL bibliography.

Computerized Data Base Searches

Computerized searches were carried out on all relevant data bases available. The only one which appeared to produce anything significant that may have been overlooked by CRREL, or by me in searching the CRREL bibliography, was that of the

TABLE I
SUBJECT HEADINGS

| | |
|-----------------------------|---------------------------|
| Active layer | Permafrost transformation |
| Active layer thickness | Photosynthesis |
| Agriculture | Plant ecology |
| Alpine soils | Plant nutrition |
| Alpine vegetation | Plant physiology |
| Arctic soils | Plants (botany) |
| Arctic terrain | Podzols |
| Arctic vegetation | Protection |
| Bibliographies | Protective vegetation |
| Biomass | Reforestation |
| Clay soils | Revegetation |
| Clays | Sands |
| Cryogenic processes | Soil classification |
| Cryogenic soils | Soil composition |
| Damage | Soil erosion |
| Desert soils | Soil formation |
| Deserts | Soil microbiology |
| Ecology | Soil moisture |
| Ecosystems | Soil moisture migration |
| Environmental impact | Soil profiles |
| Environments | Soil structure |
| Forest ecosystems | Soil temperature |
| Forest fires | Soils |
| Forest soils | Subarctic vegetation |
| Forest tundra | Subarctic soils |
| Frozen ground | Subarctic terrain |
| Fungi | Taiga |
| Geobotanical interpretation | Taiga forests |
| Grasses | Taiga regions |
| Ground ice | Taiga soils |
| Human factors | Taiga terrain |
| Kummocks | Taiga vegetation |
| Lichens | Thermokarst |
| Loess | Trees (plants) |
| Meadow soils | Tundra soils |
| Mosses | Tundra terrain |
| Mottled tundra | Tundra topography |
| Mountain soils | Tundra vegetation |
| Organic soils | Vegetation |
| Paleoecology | Vegetation factors |
| Palsas | Vegetation patterns |
| Patterned ground | Watererosion |
| Peat | Weathering |
| Permafrost heat balance | |

National Agricultural Library (NAL). Of the 122 additions I have made from it to this bibliography, the bulk of the material is on soils and forestry and may appear in NAL for its agricultural relevance. CRREL may have chosen not to include these items because of their agricultural bias or because NAL already had covered them. It is also certain that some of the 122 items had been referenced by CRREL and missed by me, an indication of the value of a good cross-checking source

The computer searches have been broken down and analyzed as follows (see Table II).

A. Those generated from CRREL by Dr. Brown and Nancy Dumont

1. 7 July 1976. NTIS, DIALOG* Search File 6.
The search strategy was not available to me. Of the 35 items produced none was used.
2. 6 July 1976. SSIE, ORBIT III.
The printout was entitled Arctic Soils, although no search statement was included. SSIE indexes research projects underway rather than publications, so no citations were provided here.
3. 7 July 1976. GEOREF, ORBIT III.
The topic was Permafrost Regions, again without a search strategy included. Some interesting pre-1970 items were noticed, as were four items already included from CRREL. Four additions to the bibliography were made.
4. 27 September 1976. NAL/CAIN, DIALOG Search File 10.
Searched by C.N. Bebee for Nancy Dumont. The search strategy and list of descriptors are included. 312 items were printed, of which 14 were additions to the bibliography. The problem with the rest was that not all appropriate descriptors had been used, and the Russian emphasis was inadequate.

B. Those generated from Boulder, Colorado, searched by V. Schneller at NOAA with input from Martha Andrews and John Emerick from INSTAAR.

5. 10 May 1976. DIALOG and ORBIT Files. A similar search strategy (available) was used on four different data bases:
 - a. NAL/CAIN. 67 items printed. When I first scanned this list many items were marked for inclusion in the bibliography but cards were not made at that time. When I rechecked after using further sources for the bibliography, I was still able to add 12 items from this list. The authors found on this list were used in the later author search of NAL.
 - b.(1) BIOL. ABST. Inc. Eleven items printed. Seven were useful but I already had five of them, so one was added.

*DIALOG is the access program for the Lockheed system of computerized bibliographical data bases; ORBIT is the same for the SDC system. Some data bases (such as NAL/CAIN) are searchable on both systems.

TABLE II

A tabulation of the numbers of citations obtained from the computerized data bases, by year.

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | Total |
|--|------|------|------|------|------|------|------|-------|
| GEOREF (A.3.)* | | | 3 | | 1 | | | 4 |
| NAL/CAIN (Lockheed) (A.4, B.5.a.) | 1 | 1 | 4 | 8 | 9 | 3 | | 26 |
| Biol. Abst. Inc. (B.5.b.1, B.5.b.2) | | | 1 | 1 | 1 | | | 3 |
| NAL/CAIN (C.) | 20 | 16 | 18 | 25 | 26 | 22 | 1 | 128 |
| Total | 21 | 17 | 26 | 34 | 37 | 25 | 1 | 161 |

*The letters and numbers following the data base names refer to their place of discussion in the text, pages ----.

- b.(2) BIOL. ABST. Inc. Nine items printed; since five had already been included, only one more was added to the bibliography.
 - c. NTIS. Seven items printed. None was added.
 - d. GEOREF. Twenty-eight items printed. Most relevant ones of these had been included on the earlier GEOREF search and nothing was added.
- C. A search generated from CRREL by Nancy Dumont with input from Dr. Jerry Brown and Martha Andrews. Searched on NAL/CAIN 23 September 1976 - ORBIT III. This was a search by author for every item published by that author and indexed at NAL. Our author list included all authors used from CRREL vol. 25-28, and the authors found from the earlier subject search of the NAL File (B.5.a.). The printout consisted of 1482 items listed on 27 different batch printouts arranged in no particular order other than a loose grouping according to letters of the alphabet. There were innumerable repetitions among the 1482 items. One hundred and four items were identified as already having been included from the CRREL bibliography. However, this identification was provided from quite a casual check; if a systematic check had been made no doubt the number would have been much higher. In the end, after over 20 hours of work, 128 items were added to the bibliography from this list. Although it is probable that only a few of these items could be considered absolutely crucial to the completeness of the bibliography, many, many items chosen serve to round out or enhance the bibliography and it is felt that this was a worthwhile check.

The idea of a search by author seems valid also, given the selective nature of subject indexing by possibly inexperienced indexers for the data bases, and also the fact that searching for subject within a particular geographic or physiographic area on the computerized data bases is still a primitive art. Experienced scientists often use authors in searching the literature as they know who is prominent in their own fields. However, it did become evident that a certain number of prolific authors had really only contributed in a small way to the subject of the bibliography.

Analysis of the Bibliography

This analysis traces developments (as reflected in the published results) in research relating to disturbance and restoration of soils and vegetation in Soviet permafrost regions. As was mentioned above, many of the earlier papers chosen for inclusion may be only of peripheral interest by comparison to those available later. The method of subdivision chosen to facilitate this type of discussion was to divide the 898 bibliographic citations into year of publication, and further to divide each year according to source of the citation (see Table III). Virtually none of the original papers have been seen by me; the discussion is based purely on information given in the titles and in the subject indexing provided at the source.

TABLE III

A tabulation of the numbers of citations from each source, by year.

| | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | Total | Per cent |
|-------------------|------|------|------|------|------|------|------|-------|----------|
| CRREL | 85 | 125 | 179 | 161 | 87 | 36 | 5 | 678 | 75 |
| Computer Searches | 21 | 17 | 26 | 34 | 37 | 25 | 1 | 161 | 18 |
| J. Brown | 0 | 6 | 0 | 4 | 5 | 24 | 20 | 59 | 7 |
| Totals | 106 | 148 | 205 | 199 | 129 | 85 | 26 | 898 | |
| Per cent | 12 | 16 | 23 | 22 | 14 | 9 | 3 | | ~ 100 |

1970

A. 85 items chosen from the CRREL bibliography. About half of these titles are of a descriptive nature, concerned with the characteristics and distribution of plants and soil. The others are more process-oriented, examining interrelationships in plant communities, biological productivity, experiments in alteration of plant growth, and other topics noted below.

Papers of special interest include:

1. A collection entitled Biological basis for the utilization of natural resources in the north with notable papers by V.N. Andreev, I.I. Shamanova, and V.F. Shamurin. The last of these is the earliest study of tundra disturbance picked up for the bibliography.

2. Another volume of collected papers is entitled Productivity of subarctic biogeocenoses, proceedings of a symposium on exploration, rational exploitation, and preservation of natural resources in the far northern USSR. Papers by V.V. Kriuchkov and M.S. Zuznetsova study the components of tundra ecosystems.

3. B.F. Kosov treats soil erosion and thermokarst in a paper on ravine development in tundra.

4. M.S. Boch's paper is a quantitative evaluation of the relationship between soil and vegetation on the tundra.

B. 21 items chosen from the computerized data bases. The trends shown in these titles are similar to the above. Noteworthy papers include:

1. V.N. Drachkov on the effect of mice and birds on spruce reforestation.

2. B.P. Kolesnikov on studies of phytoreclamation of industrial dumps.

3. R.V. Kovalev on replanting.

1971

A. 125 items chosen from the CRREL bibliography. Descriptive literature ranges from discussion of vegetation types and geographical distribution of flora to research reviews and studies of vegetative resources. The more analytical papers discuss biomass, correlation of soils and phytocoenoses (M.L. Ramenskaia), boundaries within the tundra (V.D. Aleksandrova), and modeling in biogeocenology (I.IA. Liepa). Papers on biological productivity are frequent and include three (K.N. Manakov, N.L. Chepurko and A.D. Egorov) from a work Biological productivity and mineral cycling in terrestrial plant communities. Natural regeneration of taiga and alpine forests is a frequent subject of papers, but it is not clear whether the regeneration discussed is normal or because of damage. Protective vegetation has also been researched. Soils papers include discussions of thermal characteristics, the effect of ice formation on vegetation, and agricultural utilization of soils. The general trend noticed for 1970 continues, with several symposium type volumes reflecting interest in revegetation and conservation:

1. Biogeocenoses of Taymyr tundra and their productivity (vol. 1) has interesting titles by I.V. Ignatenko, IU.I. Chernov and N.V. Matveeva.
2. Biological problems of the north.
3. Conservation in Yakutia, 5th, Irkutsk, with papers by I.P. Scherbakov, V.M. Mikhaleva, and R.V. Chugunova on reforestation.
4. Introduction of new types of useful plants in the Far North, with papers by G.W. Golovkina and G.N. Andreev.

In addition to these collections, two papers by V.V. Kriuchkov on the causes of tundra treelessness are of interest for revegetation.

B. 17 items chosen from computerized data bases. This material concentrated mainly on soils, with the paper by I.V. Vereshchagina being of particular interest.

C. 6 items from the office of Dr. Jerry Brown. IBP Tundra Biome Translations 1, 4, 5 and 6 are here, with 2 and 3 already included from the CRREL bibliography.

1972

A. 179 items from the CRREL bibliography. There was a sharp jump in the number of relevant items this year. The quality and quantity of symposium volumes highlights increasing interest in the subjects of damage and restoration, as do several publications in primary journals. In general, isolated publications seem to have declined in favor of collected works with a central theme:

1. Study of tundra and forest-tundra biocoenoses includes several good titles: one by B.P. Kolesnikov on revegetation on developed lands, one by IU.I. Chernov on soil invertebrates, and one by V.N. Andreev on the effect of human activities on vegetation.

2. IBP Tundra Biome: Proceedings, IV International meeting on the biological productivity of tundra (Leningrad). All titles promise substantial background information, and the paper by E.V. Dorogostaikaia on the influence of man on vegetation and ecosystem development seems particularly useful.

3. Soil and vegetation of permafrost regions in the USSR, 5th Symposium on Biological Problems of the North, Magadan, Apr. 18-22, 1972. Several excellent titles here include E.B. Pospelova on the revegetation of mined areas and V.N. Andreev on the influence of human activities on tundra vegetation.

4. Soils and productivity of plant communities, vol. 1.

5. Soils and vegetation of the east European forest tundra, ed. by B.A. Tikhomirov.

6. Productivity and biological turnover in the biogeocenoses of the Kola Peninsula, by K.N. Manakov.

7. Murmansk region vegetation.

Notable individual papers include:

1. V.F. Tsvetkov on forest fires and young growth in lichen taiga.
2. S.M. Sannikov and M.V. Pridnia, separately, on natural forest regeneration after logging.
3. A.A. Shuzmov on taiga restoration.
4. V.S. Smirnov on forests suffering damage by humans.

B. 26 items from computerized data bases. Several of these are on forestry, including reforestation (L.A. Lamin), and on biological activity in soils. Notable are:

1. B.N. Likhonov on environmental conditions of development of oil and gas areas.
2. L.G. Grishina on soil mites.
3. V.V. Kriuchkov on problems of the reclamation of the Far North.

1973

A. 161 items chosen from the CRREL bibliography. In spite of a decline in the number of items, 1973 shares with 1972 the high point of publication in the fields of disturbance and restoration. Symposia continue to be prominent:

1. International Conference on Permafrost, 2nd, Yakutsk. Most papers are on soil, with items by A.P. Tyrtikov on permafrost and soil cover, and V.V. Kriuchkov on permafrost effects on the tree line.
2. Biogeocenoses of Taymyr tundra and their productivity, vol. 2.
3. Problems of the north, vol. 18. Several papers here have good titles, including one by V.V. Kriuchkov on the subarctic landscapes and ways in which they are affected by industrialization, and another by him on possibilities of transforming natural environments in the northern part of western Siberia. S.A. Strelkov discusses problems in natural preservation in the northern Kola Peninsula. Other titles indicate research on preservation of natural environments.
4. Natural characteristics of swamps in the Amur River area.
5. Productivity and structure of the vegetation in young pine forests includes a title by M.A. Boch on swamp preservation.
6. Natural conditions in West Siberia, vol. 4, shows a good title by B.F. Kosov on the development of gullies, including human factors involved.

Individual contributions in this year appear of very high quality:

1. L.S. Kozlovskaja on the role of invertebrates in swamp biogeocenoses.
2. A.D. Vakurov on revegetation after fire.
3. B.N. Golovkin on transplanting herbaceous perennials to the polar north.
4. S.S. Fedotov on natural revegetation of drained bogs.
5. V.I. Vasilevich on the effects of environmental factors on subalpine meadow vegetation.
6. I.U.I. Uvarkin on thermokarst development in arctic tundra.
7. V. Ksenofontov on growing grain crops on permafrost.
8. V.V. Kriuchkov on the rational utilization of natural resources of the Far North.

B. 34 items chosen from the computerized data bases. A few notable titles turned up here:

1. D.I. Berman on soil invertebrates in winter in the taiga.
2. V.N. D'iakov on erosion after logging.
3. N.K. Talantsev on natural forest reseeding (regeneration).
4. D. Ch. Tsydypov on changes in vegetation due to grazing.

C. 4 items from the office of J. Brown. IBP Tundra Biome Translation 8 is included here as are two papers by I.U.I. Chernov from Biogeocenoses of Taymyr tundra and their productivity, vol. 2, not itemized in the CRREL bibliography.

1974

A. 87 items chosen from the CRREL bibliography. A sharp decline in the number of publications takes place here; however, the quality remains good. A substantial addition to alpine studies is noted, with one symposium, 6th All-union conference on the study and development of alpine flora and vegetation, and a review article Ecology of alpine vegetation. State of the art.

Individual papers on alpine subjects include:

1. V.V. Smirnov on soil disturbance by engineering activities in the eastern Polar Urals.
2. I.K. Bulatova on successions in tundras.

Research on taiga areas shows many publications dealing with natural or artificial regeneration of vegetation. Symposia on taiga include:

1. Study and reclamation of swamps in the northwest European USSR with papers on soil invertebrates and reforestation.

2. Scientific-industrial conference on soil erosion in the Lake Baykal Basin, Oct. 9-11, 1974, abstracts.

3. Significance of forests in water preservation and environmental protection. Proceedings of the Conference.

4. Soils and productivity of plant associations, vol. 2, with a paper by L.G. Bogatyrev on dynamics of melting permafrost in tundra soils.

5. Two volumes of the 10th International Congress on Soil Science: Soil studies in Karelia and Soil cryogenesis.

6. Biological problems of the north, 6th Symposium. Studies relating to tundra areas were evident in three volumes: Vol. 4, Sporiferous plants, plant introduction and fodder production, with papers on plant introduction by A.S. Iakovlev, N.S. Kotelina, and A.A. Shvirst. Vol. 6, Soil science and earth resources, with soils papers by V.D. Vasil'evskaia, T.S. Zvereva, D.D. Savvinov, I.V. Ignatenko, L.G. Elovskaja, and L.G. Bogatyrev and one on forage crops on tundra by V.A. Pak. Vol. 7, Plant physiology and biochemistry, has one more paper on plant introduction, by B.I. Ivanov.

Individual papers of note include:

1. B.A. Iurtsev on steppe communities.

2. G.S. Konstantinova on thermal erosion.

3. B.N. Norin on ecosystems.

4. A.P. Tyrtikov on vegetational cover dynamics and permafrost development.

Two books also seem relevant:

1. Biogeocoenoses of taiga forests (Perm Region) by G.N. Simkin.

2. Swamps of the plains near the lower Amur River, by I.U.S. Prozorov.

B. 37 items chosen from the computerized data bases. Most of these items relate to soil formation and composition. A.A. Bogushevskii's book on soil reclamation in permafrost zones appears worthwhile. Two additional items from the 10th International Congress on Soil Science, vol. 8, turned up here: I.P. Gerasimov's New soil map of the USSR and E.N. Ivanova's Soil map of the arctic. Individual papers of note are A. Sakai on the characteristics of forests on permafrost, and V.F. Shamurin on insects.

C. 5 items from the office of J. Brown. Included here are Frozen ground and soil II and Permafrost and soil III as well as a volume by E.M. Naumov on taiga soil formation and IBP Tundra Biome Translation 10.

1975

A. 36 items chosen from the CRREL bibliography. This drastic decline in number of items must indicate an inevitable time lag in CRREL pickup of items. Again, the quality is good and many useful items are noted. Symposia still predominate:

1. IBP Tundra Biome: Proceedings V. Abisko. International meeting on biological productivity. Structure and function of tundra ecosystems. Included here are papers on the Russian IBP sites.

2. Botanical studies in Yakutia contains papers on vegetation classification and dynamics.

3. Flora, vegetation and vegetational resources of Transbaikal and adjacent areas, vol. 5.

Notable individual papers include:

1. V.V. Kriuchkov on new approaches to the problem of tundra treelessness.
2. S.V. Tomirdiaro on thermokarst-lake landscapes.
3. P.I. Mel'nikov on research in preservation of northern environments.

Research in alpine areas includes vegetation analysis, and a paper by IU.N. Krasnoshchekov on the influence of vegetation on soil thawing.

Several papers on taiga areas are relevant to disturbance and restoration:

1. A.D. Vakurov on forest fires.
2. T.N. Vstovskaia on plant introduction.
3. V.N. Khlebodarov on natural regeneration after logging.
4. N.G. Moskalenko on revegetation (also in translation).

B. 22 items chosen from the computerized printouts. Bogushevskii has written on soil reclamation again; B.P. Kolesnikov on problems of land recultivation, and G.S. Konstantinova more on thermal erosion of landscapes.

C. 24 items from the office of J. Brown. IBP Tundra Biome Translations 12 and 13 are here, as is CRREL Draft Translation 477 of Golovkin's 1973 paper on transplanting herbaceous perennials to the north. Also in connection with the IBP, Resources of the biosphere (synthesis of the Soviet studies for the International Biological Programme), vol. 1, has appeared, with particularly

interesting titles by Ghilarov, Malinowsky, Shamurin and Pozdnyakov. A preprint of summaries of papers for the Symposium on Geography of Polar Countries for the XXIII International Geographical Congress appeared with many papers on the effects of development on the northern environment.

What appears to be a landmark development in research on disturbances and restoration took place in the form of a Conference - Environment Protection in Relation to Economic Development of Permafrost Regions. The conference publication consisted of abstracts, of which four, that were not later translated, are noted under this year. The section on 1976, following, details the English translation of a major part of these abstracts.

1976

A. 5 items from the CRREL bibliography. The time lag in bibliographic work becomes even more evident here, with only five relevant works having appeared through the September 1976 CRREL monthly listing. Of these, the most notable is the CRREL translation of Moskalenko's 1975 paper noted above.

B. 1 item from the computerized printouts. No comment.

C. 20 items from the office of J. Brown. Nearly all of these are from the English translation of abstracts of the "Conference ..." discussed under 1975. If the titles and abstracts of these papers are indicative, their complete publication and translation will be of immeasurable significance in further studies of disturbance and restoration.

APPENDIX I: AUTHOR INDEX

(Number in parentheses indicates number of publications authored during the year)

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Korovin, A.I.
Korzun, M.A.
Kovalev, R.V.
Krasnoshchekov, I.U.N.
Kriuchkov, V.V. (2)
Kuz'min, V.A. (2)
Lashchinskii, N.N.
Mamytov, A.M.
Matveeva, N.V.
Mel'nikov, P.I.
Moskalenko, N.G.
Nesmelova, E.I.
Nikitin, E.D. (2)
Norin, B.N.
Panasenkov, I.N.
Perfil'eva, V.I.
Petrovskii, V.V.
Rubtsov, N.I.
Rusanova, G.V.
Savich, M.A.
Scherbakov, I.P.

1975

Shikhemirov, M.G. (2)
Siplivinskii, V.N.
Tomilin, B.A.
Tomirdiario, S.V.
Tonkonogov, V.D.
Trofimov, N.N.
Vakurov, A.D.
Vasil'evskaia, V.D.
Vstovskaia, T.N.
Zvereva, T.S.

1976

Budaeva, S.E.
Chernov, I.U.I.
D'iachenko, A.P.
El'chaninov, E.A.
Galaktionov, B.V.
Gol'dtman, V.G.
Grigor'ev, N.F.
Kaganovskaia, S.E.
Kriuchkov, V.V.
Krylov, V.F.
Kulagin, I.U.Z.
Liverovskaia, I.T.
Mart'ianova, G.N.
Mihailov, N.A.
Mikhailovskii, V.V.
Moskalenko, N.G. (2)
Popov, B.I.
Sever'ianov, A.N.
Smirnov, V.V.
Sukhodol'skii, S.E.
Tikhmenev, E.A.
Tomirdiario, S.V.
Tyrtikov, A.P.
Vital', A.D.
Zhigarev, L.A.

APPENDIX II: ALPHABETICAL LISTING OF CITATIONS (1970-1976)

| | |
|-------------------------|-------------------------|
| 1976 | 1975 |
| Khramov, I. A. | Khramov, I. A. |
| Vital', A. D. | Vital', A. D. |
| Tyrtkov, A. P. | Tyrtkov, A. P. |
| Tolstoy, S. V. | Tolstoy, S. V. |
| Il'minov, E. A. | Il'minov, E. A. |
| Sukhodol'skiy, S. A. | Sukhodol'skiy, S. A. |
| Smirnov, V. P. | Smirnov, V. P. |
| Sever'yanov, A. K. | Sever'yanov, A. K. |
| Nopov, E. I. | Nopov, E. I. |
| Mokhalev, N. G. (2) | Mokhalev, N. G. (2) |
| Mikhailovskiy, V. V. | Mikhailovskiy, V. V. |
| Mel'nikov, E. A. | Mel'nikov, E. A. |
| Mart'yanov, S. S. | Mart'yanov, S. S. |
| Lavrovskiy, I. I. | Lavrovskiy, I. I. |
| Kolagin, I. E. | Kolagin, I. E. |
| Krivos, V. P. | Krivos, V. P. |
| Kirichenkov, V. V. | Kirichenkov, V. V. |
| Kaganovskiy, E. R. | Kaganovskiy, E. R. |
| Epifanov, N. E. | Epifanov, N. E. |
| Gol'dman, V. G. | Gol'dman, V. G. |
| Gel'manov, S. V. | Gel'manov, S. V. |
| El'shteyn, E. A. | El'shteyn, E. A. |
| D'zhankov, A. P. | D'zhankov, A. P. |
| Chernov, I. B. | Chernov, I. B. |
| Bubayev, S. E. | Bubayev, S. E. |
| 1970 | 1974 |
| Scherbakov, I. P. | Scherbakov, I. P. |
| Savich, M. A. | Savich, M. A. |
| Isannova, G. T. | Isannova, G. T. |
| Podinov, E. I. | Podinov, E. I. |
| Petrovskiy, V. V. | Petrovskiy, V. V. |
| Petrov, V. I. | Petrov, V. I. |
| Parusnikov, E. E. | Parusnikov, E. E. |
| Kirina, E. M. | Kirina, E. M. |
| Nil'skiy, E. D. (2) | Nil'skiy, E. D. (2) |
| Samoylov, I. I. | Samoylov, I. I. |
| Yashchenko, N. G. | Yashchenko, N. G. |
| Tel'makov, E. I. | Tel'makov, E. I. |
| Kutovskiy, N. V. | Kutovskiy, N. V. |
| Kutovskiy, V. A. (2) | Kutovskiy, V. A. (2) |
| Kirichenkov, V. P. (2) | Kirichenkov, V. P. (2) |
| Krasnoshchekov, V. S. | Krasnoshchekov, V. S. |
| Kovalov, E. V. | Kovalov, E. V. |
| Korshak, M. A. | Korshak, M. A. |
| Kozlov, A. I. | Kozlov, A. I. |
| Konstantinov, G. S. | Konstantinov, G. S. |
| Kolobov, S. P. | Kolobov, S. P. |
| Kilobov, V. N. | Kilobov, V. N. |
| Katich, V. N. (2) | Katich, V. N. (2) |
| Iur'ev, E. A. (2) | Iur'ev, E. A. (2) |
| Gorodnitskiy, S. M. | Gorodnitskiy, S. M. |
| Gorodnitskiy, A. K. | Gorodnitskiy, A. K. |
| Gorodnitskiy, E. I. (2) | Gorodnitskiy, E. I. (2) |
| Kirichenkov, A. P. | Kirichenkov, A. P. |
| Chernov, I. B. | Chernov, I. B. |
| Podinov, E. I. | Podinov, E. I. |
| Isannova, G. T. | Isannova, G. T. |
| Savich, M. A. | Savich, M. A. |
| Scherbakov, I. P. | Scherbakov, I. P. |

Abrazhko, V.I., 1973:

Physiological aspects of competition of soil moisture between grown trees and underbrush in the southern taiga biogeocenoses. In *Probl Biogeotsenologii Geobot Bot Geogr*, p. 25-38. In Russian.

NAL/CAIN*

Abstracts of the sixth all-union conference on the study and development of alpine flora and vegetation, 1974:

(Tezisy dokladov) Vsesoiuznoe soveshchanie po voprosam izucheniia i osvoeniia flory i rastitel'nosti vysokogorii, 6th, Stavropol' 1974. Stavropol', 320 p. In Russian.

30-3547†

Afanas'ev, V.A., 1972:

Evaluating the influence of water permeability of soils on forest growth in the Kamchatka River basin (Otsenka vliianiia vodoprontsaemosti pochv na rasprostranenie lesnykh formatsii v basseine reki Kamchatki) Vsesoiuznyi simpozium po biologicheskim problemam Severa, 5th, Magadan, Apr. 18-22, 1972. Pochvy i rastitel'nost' merzlotnykh raionov SSSR (Soil and vegetation of permafrost regions in the USSR) p. 105-109. In Russian with English summary.

30-688

Afanas'eva, T.V. et al., 1974:

Relict features of secondary podzolic soils in southern taiga of West Siberia (O reliktovykh priznakakh vtorichno-podzolistykh pochv lizhnoi taigi Zapadnoi Sibiri). Moscow, Universitet. Vestnik. Seriya 6, Biologiya i pochvovedenie, Jan.-Feb. 1974, No. 1, p. 118-124. In Russian with English summary. 18 refs. Remezova, G.L.

Taiga soils
Taiga vegetation
Soil formation

28-4308

Afonina, O.M., 1974:

Characteristics of some briofloras of Chukchi Peninsula (Kharakteristika nekotorykh konkretnykh bioflor chukotskogo poluostrova). Botanicheskii zhurnal, Feb. 1974, 59(2), p. 192-205. In Russian with English summary. 15 refs.

Plant ecology
Mosses
Arctic vegetation
USSR--Chukchi Peninsula

28-4225

* Source (see text).

† CRREL Bibliography number (volume 30, item 3547).

Agranat, G.A. et al., 1973:

Studies, preservation and utilization of natural environments in northern regions abroad (Izucheniye, okhrana i ispol'zovanie prirodnoi sredy na Zarubezhnom Severe). Problemy severa, 1973, Vol. 18, p. 196-212. In Russian. 30 refs. Andreeva, F.N.

Subarctic soils
Forest tundra
Subarctic vegetation

28-3759

Agrochemical characteristics of soils in the USSR. Far East (Agrokhimicheskaya kharakteristika pochv SSSR. Dal'nii Vostok). Akademiya nauk SSSR. Pochvennyi institut, Moscow, Nauka, 1971, 331 p. In Russian. Numerous references. No microfiche available. S599.R9A72

Active layer
Arctic soils
Tundra soils

Akad. Nauk SSSR, 1971

Biogeocoenoses of the tundra. International Tundra Biome translation March 1971 No. 1. 4 p. Translated from Vystavka Dostizhenii Narodnogo Khozyaistva SSSR, Akad. Nauk SSSR, 1970. 9 refs.

Tundra vegetation

BROWN

-- 1970:

Akademiya nauk SSSR.

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Tundra.
Forest tundra.

26-1690

Aleksandrova, V.D., 1971:

Analysis of vegetative cover at the boundary of spot-medallion and hummocky tundra in west Taymyr (Opyt analiza struktury rastitel'nogo pokrova na granitse fitotsenozov platnistoi i bugorkovoi tundry v Zapadnom Taymyre) Biogeotsenozy Taymyrskoi tundry i ikh produktivnost' (Biogeocoenoses of Taymyr tundra and their productivity) Leningrad, Nauka, p. 185-197. In Russian with English summary. Refs.

27-1551

Aleksandrova, N.M. et al. 1970:

Basic regularities governing acclimatization of trees and brushwood in the polar-alpine botanical garden (osnovnye zakonomernosti introduktsii derev'ev i kustarnikov v poliarno-al'piiskom botanicheskom sadu) Moscow. Glavnyi botanicheskii sad. Biulleten' 1970 Vol. 77 p. 3-7. In Russian. 6 refs. Golovkin, B.N.

Alpine soils.
Alpine vegetation.
Acclimatization.

26-434

Aleksandrova, V.D. et al., 1972:

Determining phytomass structure and its reserves in tundra plant communities (Metodika opredeleniia zapasov i struktury fitomassy tundrovyykh soobshchestv). Izuchenie biogeotsenozov tundry i lesotundry (Study of tundra and forest-tundra biocenoses). Leningrad, Nauka, 1972, p. 60-64. In Russian. 12 refs. Shamurin, V.F.

Tundra vegetation.
Biomass.

28-1256

Aleksandrova, V.D., 1970:

Overground and underground part of plant mass in plant communities of various subzones in the arctic (Nadzemnaia i podzemnaia massa rastenii v soobshchestvakh raznykh podzon Arktiki) Akademiia nauk SSSR. Komi filial. Institut biologii. Biologicheskie osnovy ispol'zovaniia prirody Severa (Biological basis for the utilization of natural resources in the North) Syktyvkar, Komi knizhnoe izd-vo, 1970 p. 13-19. In Russian. 16 refs.

Aleksandrova, V.D., 1970:

Deserts.
Arctic vegetation.
Ecology.

26-1692

Aleksandrova, V.D., 1974:

Special methods of succession analysis in Eurasian tundra vegetation. Handb Veg Sci, 8: 61-64. In English.

NAL/CAIN

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Tundra vegetation.
Vegetation patterns.
Plant productivity.

27-570

Alekseev, R.N., 1972:

Eutrophic swamps of the central Pechora River Basin (Evtrofnye bolota srednei Pechory). Geograficheskoe obshchestvo SSSR. Komi filial. Izvestiia, 1972, 2(4), p. 51-57. In Russian. 5 refs.

Peat.
Plant ecology.

28-412

Alekseeva, R.M., 1974:

Mires of the ecotone between the zones of aapa fens and palsa bogs in the northeastern European part of the USSR (Bolota perekhodnoi polosy mezhdu zonami aapa-i bugristykh bolot na severo-vostoke evropeiskoi chasti SSSR). Botanicheskii zhurnal, Jan. 1974, 59(1), p. 74-81. In Russian. 17 refs.

Mosses
Taiga vegetation
Peat

Aliev, D.A., 1973:

Data on the vegetation of the Lachin region of Azerbaijan-SSR. Izv Akad Nauk Az SSR Ser Biol Nauk (3): 3-9. In Russian? Gadzhiev, V.D.; Vagabov, Z.V.; Shikhemirov, M.G.

Biol. Abst. Inc.

Alifanov, V.M., 1975:

Composition of organic matter in some soils of the eastern Transbaikalia (Sostav organicheskogo veshchestva nekotorykh pochv Vostochnogo Zabaikal'ia) Vsesoiuznaia konferentsiia Pochvennyi kriegerez i melioratsiia merzlotnykh i kholodnykh pochv. Pushchino, Oct., 1975, Materially. Moscow, Nauka, p. 109-114. In Russian. 7 refs. Zolotareva, B.N.

30-4238

Al'ter, S. P., 1971:

Landscape method of geomorphological interpretation of aerial photographs, taking as an example the area of the lower course of the Irtysh River (Landshartnyi metod geomorfologicheskogo deshifirovaniia aerofotosnimkov na primere Nizhnego Priirtysh'ia). Sibirskii geograficheskii sbornik, 1971, Vol. 7, p. 143-198. In Russian. 100 refs.

Geobotanical interpretation

Vegetation

Taiga terrain

28-3025

An, P. A., 1971:

Applicability of the photometric method of determining yield of the mass of mountain vegetation. O primenimosti fotometricheskogo metoda opredeleniia urozhaiia rastitel'noi massy v gornykh usloviakh. Tashkend. Sredneaziatskii nauchno-issledovatel'skii gidrometeorologicheskii institut. Trudy 1971 55(70). p. 69-74. In Russian. 9 refs. QC851.T28.

Alpine vegetation.

Biomass.

27-2631

Anatomical structure of leaves of some Arctic sedges
Anatomicheskoe stroenie lista nekotorykh arkticheskikh osok. Botanicheskii zhurnal, March, 1972, 57(3) p. 373-381. In Russian. 14 refs.

Arctic soils.

Arctic vegetation.

Plant ecology.

27-20

Andreev, G.N., 1970:

Regularities governing the success of plant introduction in the Far North (K voprosu o zakonmernostiakh pereseleniia rastenii na Krainii Sever) Akademiia nauk SSSR. Komi filial. Institut biologii. Biologicheskie osnovy ispol'zovaniia prirody Severa (Biological basis for the utilization of natural resources in the North) Syktyvkar, Komi knizhnoe izd-vo, 1970 p. 81-85. In Russian. 19 refs.

Arctic vegetation.

Plants (Botany).

Arctic soils.

26-1703

Andreev, V.N. et al., 1972:

Determining seasonal variations in surface Phytomass of herbaceous plants. Metodika opredeleniia sezonnykh izmenenii zapasa nadzemnoi fitomassy u travianistykh rastenii. Botanicheskii zhurnal Oct. 1972 57(10). p. 1265-1279. In Russian. Galaktionova, T.F. Zakharova, V.I. Neustroeva, A.I.

Tundra soils.

Tundra vegetation

Biomass.

USSR-Kolyma River.

27-2347

Andreev, V.N., 1970:

Geographic regularities governing the distribution of surface phytomass in the tundra zone, in relation to the movement of tree and shrub vegetation to the north (Nekotorye geograficheskie zakonomernosti v raspredelenii nadzemnoi fitomassy v tundrovoi zone v sviazi s prodvizheniem na sever drevesno-kustarnikovoii rastitel'nosti) Akademiia nauk SSSR. Komi filial. Institut biologii; Biologicheskie osnovy ispol'zovaniia prirody Severa (Biological basis for the utilization of natural resources in the North)

Andreev, V.N., 1970:

zation of natural resources in the North) Syktyvkar, Komi knizhnoe izd-vo, 1970 p. 6-13. In Russian. 22 refs.

Arctic vegetation.

Tundra vegetation.

Forest tundra.

26-1691

Andreev, V.N., 1972:

Influence of human activities on tundra vegetation in relation to general trend of tundra biome development (Izuchenie antropogennykh vozd istvii na rastitel'nost' tundry v sviazi s obshchim napravleniem razvitiia tundrovogo bioma) Vsesoiuznyi simpozium po biologicheskim problemam Severa, 5th, Magadan, Apr. 18-22, 1972. Pochvy i rastitel'nost' merzlotnykh raionov SSSR (Soil and vegetation of permafrost regions in the USSR) p. 173-179. In Russian with English summary. Refs. 30-694

Andreev, V.N., 1971:

Methods of estimating and mapping forage reserves in phytomass of Subarctic regions (Metodika ucheta i kartirovaniia kormovykh zapasov fitomassy Subarktiki). Rastitel'nye resursy, 1971, 7(3), p. 439-444. In Russian. 8 refs.

Subarctic vegetation

Tundra vegetation

Forest tundra

26-3019

Andreev, V.N. et al., 1972:

Methods of estimation of seasonal changes in above-ground phytomass of herbs. International biological programme, tundra biome; proceedings IV. International meeting on the biological productivity of tundra, Leningrad USSR October 1971. Edited by F.E. Wielgolaski and Th. Rosswall. Stockholm, tundra biome steering committee, April 1972. p. 102-110. Galaktionova, T.F. Zakharova, V.I. Neustroeva, A.I.

Tundra vegetation.

Plants (Botany).

27-2662

Andreev, V.N., 1974:

Pasture management in connection with reindeer raising. In *Pastbishcha i senokosy SSSR*. A.P. Movsisiants, comp., p. 461-471. In Russian.

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Andreev, V.N., 1975:

Seasonal dynamics of some plants in subarctic tundra (Sezonnaia dinamika nadzemnoi fitomassy nekotorykh rastenii subarkticheskoi tundry) Botanicheskie issledovaniia v Iakutii Yakursk, Iakutskii filial SO AN SSR, p. 72-78. In Russian. 2 refs. Galaktionova, T.F.; Meustroeva, A.I.

30-3276

Andreev, V.N., 1972:

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Arctic vegetation.
Arctic soils.
Tundra vegetation.

28-1252

Andreev, G.N., 1971:

Transplantation of some plants growing in the northeastern USSR to Kola Peninsula. Pereselenie rastenii Severo-Vostoka SSSR na Kol'skii poluostrov. Vvedenie v kul'turu novykh vidov poleznykh rastenii v usloviakh Krainego Severa. (Introduction of new types of useful plants in the Far North). Leningrad, Nauka, 1971 p. 82-98. In Russian. 17 refs.

Taiga soils.
Taiga vegetation.

Andreev, G.N., 1971:

Forest tundra.
USSR-Kola Peninsula.

27-2585

Andreiashkina, N.I., 1974.

Accumulation and decomposition of vegetational remains in forest tundra east of the Urals (Kazlozhenie i nakoplenie rastitel'nykh ostatkov v lesotundre Zaural'ia) Akademiia nauk SSSR. Ural'skii filial. Institut ekologii rastenii i zhivotnykh. Trudy 1974 Vol. 88 p. 129-134. In Russian. 24 refs.

30-453

Andreiashkina, N.I. et al., 1972:

Estimating the productivity of some shrub, dwarf shrub and herbaceous communities in forest tundra. Produktivnost' kustarnikovykh, kustarnichkovykh i travianykh soobshchestv lesotundry i metodika ee otsenki. Edologiya. 1972 No. 3. p. 5-12. In Russian. 13 refs. Gorchakovskii, P.L.

Tundra vegetation.
Forest tundra.
Plant ecology.

27-1695

Andreiashkina, N.I., 1974:

Leaf shedding in *Vaccinium vitis-idaea* and *Ledum palustre* var. *decumbens* in subarctic forest tundra (Zaural'ia) Akademiia nauk SSSR. Ural'skii filial. Institut ekologii rastenii i zhivotnykh. Trudy 1974 Vol. 88. p. 124-128. In Russian.

30-452

Andreiashkina, N.I., 1971:

Procedure for determining the overground part of phytomass of shrubs and dwarf shrubs in forest tundra (K metodike opredeleniia nadzemnoi massy kustarnikov i kustarnichkov lesotundry) Ekologiya 1971 No. 2 p. 82-84. In Russian. 4 refs.

Forest tundra.
Tundra vegetation.
Ecology.

26-1054

Andreiashkina, N.I. et al., 1972:

Productivity, and methods of its assessment, of shrub, dwarf-shrub, and herbaceous communities of the forest tundra. *Soviet journal of ecology*, May-June 1972 (Publ. March 1973) 3(3), p. 195-202. Translated from *Ekologiya*. For Russian original see 27-1695. 13 refs. Gorchakovskii, P.L.

Tundra vegetation.
Forest tundra.
Plant ecology.

28-348

Andreiashkina, N.I., 1974:

Relationship between the weight of green and fallen leaves in some hypoarctic bushes and shrubs (O sootnoshenii vesa zelenykh i opavshikh list'ev pri opredelenii opada u nekotorykh gipoarkticheskikh kustarnikov i kustarnichkov) Akademiia nauk SSSR. Ural'skii filial. Institut ekologii rastenii i zhivotnykh. Trudy 1974 Vol. 88 p. 121-123. In Russian. 3 refs.

30-451

Andrianov, V.I., 1971:

Protective vegetation grows even in tundra (I v tundre rastet zhivaia zashchita) Put' i putevoe khoziaistvo 1971 No. 8 p. 27-28. In Russian.

Tundra vegetation.

26-1455

Anisimov, V. M., 1973:

Filtration properties of peats in the central Amur River plain (O fil'tratsionnykh svoistvakh torfov Sredneamurskoi nizmennosti). Prirodnye osobennosti bolot Priamur'ia (Natural characteristics of swamps in the Amur River area). Novosibirsk, Nauka, 1973, p. 89-96. In Russian. 12 refs.

Peat

28-3485

Anisimov, V.M., 1973:

Thermal regime of swamp soils in the central Amur River plain (Teplovoi rezhim bolotnykh pochv Sredneamurskoi nizmennosti). Prirodnye osobennosti bolot Priamur'ia (Natural characteristics of swamps in the Amur River area). Novosibirsk, Nauka, 1973, p. 123-131. In Russian. 9 refs.

Active layer
Soil temperature

28-3489

Anisimova, K.A., 1974:

Perennial grasses in southwest Yakutia (Mnogoletnie travy na iugo-zapada Iakutii) Biologicheskie problemy Severa, VI simpozium, Vypusk 4 (Biological problems of the north, 6th symposium, Vol. 4) Yakutsk, Akademiia nauk SSSR, p. 109-113. In Russian. Lipangin, G.I.

29-3670

Aparin, B. F., 1972:

Investigating Taiga soils with two bleached zones in the northeastern part of the RSFSR. Nekotorye rezul'taty issledovaniia pochv s dvumia osvetlennymi gorizontami v taezhnoi polose severo-zapada RSFSR. Leningrad. Universitet. Vestnik. Geologiya-geografiia. Sept. 1972 18(3). p. 99-107. In Russian with English summary. 7 refs.

Taiga soils.
Soil formation.
Podsol.

27-1720

Aparin, B.F., 1973:

Mineralogical characteristics of the silt fraction of podsoils developing on binary rocks of central taiga in the European RSFSR (Mineralogicheskaiia kharakteristika ilistoi fraktsii podzolistykh pochv na dvuchlennykh porodakh srednei taigi evropeiskoi chasti RSFSR). Leningrad. Universitet. Vestnik. Geologiya-geografiia. March 1973, 6(1), p. 70-77. In Russian with English summary. 10 refs.

Taiga soils.
Soil formation.
Soil profiles.

28-417

Archegova, I.B., 1974:

Humus profiles of some taiga and tundra soils in the European USSR. Sov. Soil Sci, 6(2): 136-141. In English. Translated from Pochvovedenie 6(3): 23-28.

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Archegova, I.B., 1974:

Humus profiles of some taiga and tundra soils of the European USSR. Pochvovedenie, 3: 23-28. In Russian. English summary.

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Archegova, I.B., 1972:

Humus zone in the clayey loam tundra soils in the northeast European tundra. Kharakter gumusirovannogo gorizonta v suglinistykh tundrovnykh pochvakh na severovostoke Evropeiskoi tundry. Ekologiya. 1972 No. 5. p. 64-67. In Russian. 8 refs.

Tundra soils.
Soil composition.
Tundra vegetation.

27-2352

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USSR-Vorkuta.

26-1713

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(Lockheed)

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Soil formation
Taiga vegetation
Soil composition
USSR-Tavda

28-2665

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Tundra soils.

27-2659

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Arctic soils
Arctic vegetation

28-3753

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Taiga soils.
Taiga vegetation.

27-2346

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Lichens
Tundra vegetation

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Soil formation
Forest soils
Meadow soils
USSR--Khabarovsk

26-3818

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Alpine vegetation.
Ecology.

26-462

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Arctic soils
Arctic vegetation

28-3751

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Vegetation.
Plant ecology.

27-1696

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29-1073

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USSR--East Siberia

28-3528

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Subarctic vegetation.

26-1464

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Taiga vegetation.
Thermokarst.

28-268

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28-3762

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Tundra soils
Tundra vegetation
Soil formation
USSR--Taymyr Peninsula

28-4108

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Tundra soils
Tundra vegetation
Plant ecology

26-1841

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29-3652

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29-1063

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Tundra regions.
USSR - Far north.

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Tundra regions.
USSR--Far north.

27-2005

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Tundra vegetation
Mosses
Plant ecology

28-4114

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Peat
Soil formation

28-2717

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Vegetation.
Plant ecology.

26-1698

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Plant ecology
Peat

28-1676

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Tundra soils.
Tundra vegetation.
Ecosystems.

26-1058

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Tundra
Plant ecology
Soil formation
USSR--Yamal Peninsula

26-2617

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Forest tundra
Tundra soils
Soil moisture migration

26-2532

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Tundra vegetation.

27-2668

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29-1068

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Tundra soils.
Thaw depth.

27-2685

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Tundra soils
Soil temperature
USSR--Taymyr

26-3227

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Tundra soils

28-3029

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6 Biologiya i pochvovedenie Mar.-Apr.
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30-329

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Gidrotekh Melior 10: 69-76. In Russian.

NAL/CAIN

(Lockheed)

Bogushevskii, A.A., 1974:

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loty) Moscow, Kolos, 254 p. In Russian
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In Russian. Refs.

30-3273

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of the alpine forests of Central Asia.
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NAL/CAIN

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Bozhnova, T.A., 1972:

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Soil profiles.
Taiga soils.
Taiga vegetation.

28-364

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Subarctic soils
Plant ecology

28-3749

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30-233

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30-689

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30-3275

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30-4097

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29-3121

Bulatova, I.K., 1972:

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30-705

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Interpretation of aerial photographs of swamps in the lower Amur river plains (Deshifirovanie bolot Nizhneamurskikh nizmennostei po aerofotosnimkam). Prirodnye osobennosti bolot Priamur'ia (Natural characteristics of swamps in the Amur River area). Novosibirsk, Nauka, 1973, p. 132-141. In Russian. 4 refs. Prozorov, I.U.S.

Vegetation
Patterned ground
Geobotanical interpretation

28-3490

Bulvchev, V.G. et al., 1972:

Properties of peat soils. Svoistva torfianyykh gruntov Russia. Ministerstvo vysshego i rednego spetsial'nogo obrazovaniia. Izvestiia vysshikh uchebnykh zavedenii. Stroitel'stvo i arkhitektura. 1972 No. 7. p. 110-117. In Russian. 9 refs. Amarian, L.S. Baxin, E.T. Lishtvan, I.I.

Peat.
Soil moisture migration.

27-2283

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Desert soils.
Vegetation.
Alpine vegetation.

27-36

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30-686

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Alpine soils.
Alpine vegetation.
USSR--Tien Shan

28-735

Charushnikova, V.V., 1971:

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Taiga vegetation
Taiga soils
Soil formation

26-2520

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Taiga soils
Soil formation
Clay soils
Peat

26-2891

Chashchina, N.I., 1971:

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Soil moisture migration
Soil temperature

28-58

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Mountain soils
Taiga soils
Tundra soils
Biomass

28-2757

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Tundra vegetation.
Plants (Botany).
Ecosystems.
Biological Productivity.

27-2687

Chepurko, N.L., 1972:

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27-1229

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Tundra soils.
USSR-Taymyr.

27-2658

Chernov, I.U.I., 1972:

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Tundra soils.
Ecosystems.
Tundra vegetation.

28-1264

Chernov, I.U.I., 1971:

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Polar deserts of the Taymyr peninsula (Poliarnye pustyni poluostrova Taymyr) Botanicheskii zhurnal Mar. 1976 61(3) p. 297-311 In Russian. 15 refs.

30-4095

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30-2202

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29-1465

Chizhikov, P.N., 1970:

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Forest tundra
Tundra soils
Arctic soils

26-2504

Chugunova, R.V., 1971:

Reforestation of cut-over pine stands in southwest Yakutia (Vozobnovlenie sosnovykh vyrubok v iugozapadnoi IAKutii) Respublikanskoe soveshchanie po okhrane prirody IAKutii, 5th, Irkutsk, 1971. Okhrane prirody IAKutii (Conservation in Yakutia) Irkutsk, Vostochno-Sibirskoe knizhnoe izd-vo, p. 82-88. 5 refs. In Russian.

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Effectiveness of nitrogen fertilizers in grey forest soils of the Novosibirsk region. Effektivnost' azotnykh udobrenii v svyazi s soderzhaniiem usvoiaemogo azota v serykh lesnykh pochvakh Novosibirskoi oblasti. Agrokhiimiia, Nov. 1971, No. 11, p. 11-14. In Russian. 8 refs.

Forest soils.
Soil composition.
USSR--Novosibirsk.

27-132

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29-3800

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Hummocks.
Cryogenic processes.
Palsas.

28-270

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Elementary geosystems of tundra (Elementarnye geosistemy v usloviakh tundry). Geograficheskoe obshchestvo SSSR. Izvestiia, March-April 1973, 105(2), p. 118-127. In Russian. 14 refs.

Tundra soils.
Patterned ground.
Tundra vegetation.

28-101

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Morphology of tundra landscapes in the Malozemel'skaia and Bol'shezemel'skoi tundra. Leningrad. Universitet. Uchenye zapiski. Seriya geograficheskikh nauk, 1971, 21(358), p. 100-115. In Russian. 7 refs.

Tundra terrain.
Tundra vegetation.
Plant ecology.

28-505

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Variation in properties of surface-gley soil in the Ob' forest tundra in relation to spotting processes (Izmenenie svoistv poverkhnostno-gleevykh pochv priobskoi lesotundry v svyazi s protsessami piatnoobrazovaniia) Ekologiya 1971 No. 2 p. 35-44. In Russian. 17 refs.

Forest tundra.
Tundra vegetation.
Ecology.

26-1053

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Productivity of aspen forests in Tomsk region (O produktivnosti osinnikov Tomskoi oblasti). Akademiia nauk SSR. Sibirskoe otdelenie. Biologicheskii institut. Trudy po lesnomu khozhiaistvu Zapadnoi Sibiri. 1971, Vol. 9, p. 32-40. In Russian. 25 refs. SD95.A6

Taiga vegetation.
Taiga soils.

28-116

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Vegetation and its peculiarities in the area of the 'Ust-belaia Village (Middle course of the Anadyr' River). (Rastitel'nyi pokrov i osobennosti flory v raione poselka Ust' Belaia (srednee techenie r. Anadyr')) Akademiia nauk SSSR. Komi filial. Institut biologii. Biologicheskie osnovy ispol'zovaniia prirody Severa (Biological basis for the utilization of natural resources in the North) Syktyvkar, Komi knizhnoe izd-vo, 1970 p. 60-64.

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Tundra soils.
Tundra vegetation.
Plant ecology.

26-1700

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Photosynthesis of arctic mosses under natural conditions (Fotosintez arkticheskikh mkhov v estestvennykh usloviakh) *Ekologiya* Jan.-Feb. 1976 No.1 p. 92-95. In Russian. 5 refs.

30-4111

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Soils of some plant associations in the southeastern Altay (Pochvy nekotorykh rastitel'nykh assotsiatsii iugo-vostochnogo Altaia). *Ekologo-morfologicheskie i biokhimicheskie osobennosti poleznykh rastenii dikorastushchei flory Sibiri* (Ecologic-morphological and biochemical properties of useful plants of the Siberian wild flora). Novosibirsk, Nauka, 1970, p. 272-286. In Russian. SB108.R9E38

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Mountain soils
Alpine vegetation
Plant ecology
USSR--Altay Mountains

26-1922

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Soil composition
Soil moisture
Forest soils

28-1935

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D'iakov, V.N., 1974:

Erosion processes in felled areas in the mountain forests of the Carpathians. *Soviet hydrology: selected papers 1973* (Publ. Oct. 1974) No. 3 p. 273-276. 5 refs. Transl. from *Lesovedenie*, No.3, 1973, p. 55-59.

29-2269

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Basic characteristics of the heat regime of soil with underlying thawed and frozen rocks. *Osnovnye osobennosti teplovogo rezhima pochv, podstilaemykh talymi i mnogoletnemerzlymi porodami. Klimat pochvi*. (Soil climate. Proceedings of the Conference of the Scientific Council on the Study of Climatic and Agroclimatic Resources, Nov., 1969). Leningrad, Gidrometeoizdat, 1971, p. 19-30. In Russian. 6 refs. S600.M55

Soil temperature.

27-1030

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Thermal conditions of soils in permafrost regions as a factor in the processes of cryogenesis and pedo-cryogenesis (Termicheskie uslovia pochv oblasti mnogoletnemerzlykh porod kak faktor protsessov kriogeneza i pedokriogeneza). *International Conference on Permafrost*, 2nd, Yakutsk, 1973, Vol. 1, p. 20-28. In Russian. 5 refs.

Cryogenic soils.
Soil formation.

28-1016

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Forest soils.
Forest ecosystems.
Forest tundra.

28-128

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Pine forests of the northwestern part of the Karelian Isthmus (Sosnovye lesa severo-zapada Karel'skogo peresheika). *Botanicheskii zhurnal*, 1973, 58(8), p. 1093-1107. In Russian with English summary. 32 refs.

Taiga vegetation
Plant ecology
Lichens

28-1673

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Spruce forests in the northwest of the Karelian isthmus (El'niki severo-zapadnoi chasti Karel'skogo peresheika). *Lesovedenie*, March-April, 1973, No. 2, p. 51-64. In Russian with English summary. 16 refs.

Taiga vegetation.

Plant ecology.

Taiga soils.

28-1301

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Microflora of the secondary-podsol soils in West Siberia (O mikroflore vtorichno-podzolistykh pochv Zapadnoi Sibiri). Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniia. Nauchnye doklady vysshei shkoly. Biologicheskie nauki, 1971, Vol. 9, p. 112-117. In Russian. 14 refs. Nikitin, D.I., Mazurenko, A.N.

Podsol

26-3226

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Recent swamp-forming processes in the central Taiga near the Ob' River. *Sovremennye bolotoobrazovatel'nye protsessy v srednetazhnom Priob'e*. Akademiia nauk SSSR. Izvestiia. Seriiia geograficheskaiia. Mar.-Apr. 1972 No. 2. p. 26-38. In Russian. 17 refs.

Peat.

Taiga soils.

Taiga vegetation.

27-1774

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Types of mountain forests according to natural relative continuity of their plant cover. *Voprosy tipologii gornykh lesov v sviazi s trirodoi otноситel'noi nepreryvnosti ikh rastitel'nogo pokrova*. Moskovskoe obshchestvo ispytatelei prirody. Trudy, 1970 Vol. 38, p. 24-33. In Russian with English summary. 32 refs.

Mountain soils.

Forest soils.

Forest ecosystems.

27-305

Dorofeeva, N.A., 1974:

The quantitative composition of humus in alpine Chestnut soils of Tuva ASSR. *Izv Timiriazevsk S-kh Akad* 1: 65-73. In Russian. English summary. Kaurichev, I.S.

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Influence of man on the vegetation of the Tareya settlement. International biological programme, tundra biome; proceedings IV. International meeting on the biological productivity of tundra, Leningrad USSR, October 1971. Edited by F.E. Wielgolaski and Th. Rosswall. Stockholm, Tundra biome steering committee. April 1972. p. 199-200. 1 ref.

Tundra vegetation.

27-2678

Dorogostaikaia, E.V. et al., 1973:

Soil algae of the West Taymyr tundras (Pochvennye vodorosli tundr Zapadnogo Taymyra). *Biogeotsenozy Taymyrskoi tundry i ikh produktivnost'*. Vyp.2 (Biogeocenoses of Taymyr tundra and their productivity. Vol. 2). Leningrad, Nauka, 1973, p. 128-138. In Russian with English summary. 10 refs. Sdobnikova, N.V.

Tundra vegetation

Tundra soils

Plant ecology

USSR--Taymyr Peninsula

28-4116

Dorogostaikaia, E.V., 1972:

Weeds of the far North of the U.S.S.R. (Sornye rasteniia Krainego Severa SSSR). Leningrad, Nauka, 1972, 172 p. In Russian with English summary and table of contents enclosed. 288 refs.

Arctic soils.

Arctic vegetation.

Data on the taxonomy, ecology and geographic distribution of native and introduced flora in the Arctic and Subarctic regions of the USSR are given.

2

Dorogostaikaia, E.V.

Man's influence on the distribution of plants and adaptations to new ecosystems of newly introduced plants are discussed. A comparison of Arctic and Antarctic flora (p. 30-33) shows that Arctic plants had favorable conditions to spread freely to the North during a long period of time and became hardy to the severe environment, resisting attempts of new species to survive, unless ecological conditions change. Plant species brought to Subantarctic islands and adapting not to environment, but to survival

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Dorogostaikaia, E.V.

during a long travel over the ocean have propagated widely, almost completely replacing native plants. Antropochorous cosmopolitan plants of the Far South are listed.

28-629

Drachkov, V.N., 1970:

The effect of mice and birds on spruce reforestation. (Picea) Les Zh, 6: 141-142. In Russian.

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Drachkov, V.N., 1972:

Trunks of pine trees of the European north affected by cancer (Rak stvolov v nasazhdeniakh sosny evropeiskogo Severa). Lesnoe khoziaistvo, Oct. 1972, No. 10, p. 64-65. In Russian.

Taiga soils.

Taiga vegetation.

Fungi.

28-503

Dubovets, A.G., 1971:

High bog vegetation of the Drut'Berezina interfluvium (Rastitel'nost' verkhovykh bolot Drut' Berezinskogo mezhdurech'ia). Vsesoiuznoe botanicheskoe obshchestvo. Belorusskoe otdelenie. Botanika, 1971, Vol. 13, p. 35-40. In Russian. 9 refs.

Peat

Vegetation

Plant ecology

26-2500

Dylis, N.V., 1974:

Program and methods of biogeocoenological investigations (Programma i metoda Biogeotsenologicheskikh issledovaniy) Moscow, Nauka, 403 p. In Russian with English table of contents. refs. p. 375-401.

29-2756

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Vegetation of primary alpine rock wastes of the Gissarskii Range and its role in their reinforcement. Probl Bot (Leningr), 12: 142-144. In Russian.

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Egorov, A.D., 1971:

Trace element migration and accumulation in the vegetation of Yakutia (Migratsiya i akumulatsiya mikroelementov v rasteniyakh IAKutii). Biologicheskaya produktivnost' i krugovorot khimicheskikh elementov v rastitel'nykh soobshchestvakh (Biological productivity and mineral cycling in terrestrial plant communities). Leningrad, Nauka, 1971, p. 273-277. In Russian. 8 refs. ON541.3.B56

Subarctic soils

Tundra vegetation

Taiga vegetation

28-2758

Egorov, O.V., 1972:

Program for studying large mammals in the Arctic and Subarctic (Programma izucheniia krupnykh nazemnykh mlekopitaushchikh Arktiki i Subarktika). Izuchenie biogeotsenozov tundry i lesotundry (Study of tundra and forest-tundra biocenoses). Leningrad, Nauka, 1972, p. 115-117. In Russian.

Tundra vegetation.

Plant ecology.

Ecosystems.

28-1266

El'chaninov, E.A., 1976:

Environmental protection during the construction and operation of mines in permafrost regions. Symposium on Environmental Protection in Relation to Economic Development of Permafrost Regions. CRREL TL 518, p. 31-33.

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Elovskaya, L.G., 1972:

Cryogenic north taiga soils in the Iukagirskoe plateau. (Merzlotnye severotaezhnye pochvy Iukagirskogo ploskogor'ia) Vsesoiuznyi simpozium po biologicheskim problemam Severa, 5th, Magadan, Apr. 18-22, 1972. Pochvy i rastitel'nost' merzlotnykh raionov SSSR (Soil and vegetation of permafrost regions in the USSR) p. 56-62. In Russian with English summary. 11 refs. Teterina, L.V.; Petrova, L.I.

30-679

Elovskaya, L.G., 1974:

Melioratsiia merzlotnykh pochv IAKutii) Biologicheskie problemy Severa, VI simpozium; Bypusk 6: Pochvovedenie i zemel'nye resursy (Tezisy dokladov) (Biological Problems of the North, 6th symposium; Vol. 6: Soil science and earth resources (Summaries of the papers)) Yakutsk, Akademiia nauk SSSR, p. 57-65. In Russian. Kono-rovskii, A.K.

29-1069

Elovskaya, L.G., 1975:

Soil formation conditions and peculiar tundra soils in northeastern USSR (Usloviia pochvoobrazovaniia i osobennosti tundrovnykh pochv severo-vostoka SSSR) Vsesoiuznaia konferentsiia Pochvennyi kriogenez i melioratsiia merzlotnykh i kholodnykh pochv. Pushchino, Oct., 1975, Materialy Moscow, Nauka, p. 29-32. In Russian. 4 refs.

30-4226

Environment protection in relation to economic development of permafrost regions. Abstracts of papers presented at a conference (Okhrana obruzhaiushchei sredy v svyazi s rasprostraneniia mnogoletnemerzlykh porod. Tezisy dokladov) Melnikov, P.I. ed. Yakutsk, 1975 141 p. In Russian with English table of contents enclosed.

30-2381

Ermolaev, V.I., 1972:

Studying algae in tundra water bodies (Izuchenie vodoroslevoi rastitel'nosti tundrovyykh vodoemov). Izuchenie biogeotsenozov tundry i lesotundry (Study of tundra and forest-tundra biocenoses). Leningrad, Nauka, 1972, p. 84-86. In Russian.

Tundra vegetation.
Plant ecology.
Photosynthesis.

28-1261

Ershov, E.D. et al., 1973:

Ice sublimation in fine-grained soils of various cryogenic textures, upon their reaction with air (Sublimatsiya l'da v dispersnykh gruntakh razlichnogo kriogennoy stroeniya pri ikh vzaimodeystvii s vozdushnym potokom). International Conference on Permafrost, 2nd, Yakutsk, 1973 1973, Vol. 4, p. 185-188. In Russian. 6 refs. Gurov, V.V. Dostovalov, B.N.

Soil moisture migration.

28-1102

Euks, I.I., 1970:

Dynamics of the vegetational cover in the northern part of the central Siberian Plateau. Dinamicheskie tendentsii rastitel'nogo pokrova na severe Sredne-Sibirskogo ploskogor'ia. Akademiya nauk SSSR. Sibirskoe otdelenie. Institut geografii Sibiri i Dal'nego Vostoka. Doklady 1970 Vol. 28 p. 10-16. In Russian. 19 refs.

Forest tundra.
Tundra soils.
Tundra vegetation.

27-1818

Evdokimova, T.I., 1972:

Productivity of some plants in Karelia and their role in the soil formation processes. (O produktivnosti nekorotkykh rastenii Karelii i ikh roli v protsessakh pochvoobrazovaniia) Pochvy i produktivnost' rastitel'nykh soobshchestv. Vyp 1 (Soils and productivity of plant communities. Vol. 1) Moscow, MGU, p. 177-130. In Russian. 14 refs.

27-1230

Fadin, I.A. et al., 1972:

Drying felled areas of bilberry heath and grass moors by surface drainage. Lesnoe khoziaistvo, Feb. 1972, No. 2, p. 41-43. In Russian. Smolianskaya, L.B., Stadnitskaia, N.I.

Taiga soils.
Taiga vegetation.

27-388

Fedina, A.E., 1972:

Physiographic subdivision of the eastern part of the northern slope of the Caucasus (Fiziko-geograficheskoe raionirovanie vostochnoi chasti severnogo sklona Bol'shogo Kavkaza). Landshaftnoe kartografirovanie i fiziko-geograficheskoe raionirovanie gornyykh oblastei (Landscape mapping and physiographic zoning of mountain regions). N.A. Gvozdet'skii, ed. MGU, 1972, p. 5-96. In Russian. 84 refs.

Alpine soils.

Fedina, A.E.

Alpine vegetation.
Plant ecology.
USSR--Caucasus.

28-730

Fedorov, K.N. et al., 1972:

Manganic-ferrous formations in the taiga soils of the Ob'-Irtys interfluvium (Margentsovo-zhelezistyie novoobrazovaniya v pochvakh taezhnoi zony Ob'-Irtyskogo mezhdurech'ia). Russia. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Nauchnye doklady vysshei shkoly. Biologicheskie nauki, 1972, No. 7, p. 125-129. In Russian. 6 refs. Shoba, S.

Taiga soils
Soil formation
Soil profiles

28-2714

Fedorova, N.M., 1972:

Hydrothermal regime of seasonally freezing and thawing soils and subsoils in the northern and central taiga of west Siberia (Gidrotermicheskii rezhim sezononpromerzaiushchikh i sezonoprotaivaiushchikh pochvogruntov severnoi i srednei taigi Zapadnoi Sibiri) Vsesoiuznyi simpozium po biologicheskim problemam Severa, 5th, Magadan, Apr. 18-22, 1972. Pochvy i rastitel'nost' merzlotnykh raionov SSSR (Soils and vegetation of permafrost regions in the USSR) p. 79-81. In Russian with English summary. 3 refs.

30-683

Fedorova, N.M., 1974:

Thermal and moisture regimes in a soil profile affected by prolonged seasonal freezing (middle taiga subzone, west Siberia). *Geoderma* 12(1/2, special issue): 111-119. In English.

NAL/CAIN

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Taiga vegetation
Tundra vegetation

28-2705

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29-1028

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Tundra soils.
Tundra vegetation.
Mosses.

26-1696

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30-1264

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Taiga soils.
Taiga vegetation.
Ecology.

26-1050

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Mountain soils
Forest soils
Alpine vegetation
USSR--Ural Mountains

26-1866

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Taiga vegetation
Taiga soils
Soil formation

26-1870

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Taiga vegetation
Plant ecology
USSR--Ural mountains

26-1865

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Soil formation
Soil moisture
Taiga soils

26-1871

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30-442

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29-1228

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Cryogenic soils
Soil profiles
Taiga soils

28-2715

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Taiga soils.
Taiga vegetation.

28-119

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30-2298

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30-1595

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30-2279

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30-449

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NAL/CAIN (Lockheed)

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Meadow soils.
Soil moisture.

28-1198

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30-687

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Taiga vegetation.

Taiga soils.

27-130

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Plant ecology

Arctic vegetation

Arctic soils

USSR--Wrangel Island

28-4227

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Tundra vegetation.

Photosynthesis.

USSR--Wrangel Island.

28-37

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Arctic vegetation

Arctic soils

USSR--Wrangel Island

28-1979

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Tundra.

Taiga terrain.

Ecology.

27-1773

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Plant ecology
Tundra soils
Tundra vegetation

26-1728

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Tundra soils.
Tundra vegetation.
Taiga soils.
Taiga vegetation.

Glazovskaia, M.A.

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Peat.
Plant ecology.
vegetation.

27-18

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Soil formation
Alpine soils
Alpine vegetation
USSR--Amur River

26-3819

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USSR--Far East

26-3820

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Tundra soils.
Tundra vegetation.
Plant ecology.

28-1254

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Subarctic vegetation
Plant ecology

28-3188

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For Russian original see 28-3188.

BROWN

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Arctic soils.
Tundra soils.

27-2586

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Soil formation.
Soil composition.
USSR-Kola Peninsula.

26-1717

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Soil temperature.
Soil chemistry.

27-1029

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30-439

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Alpine vegetation.

27-2608

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Forest tundra.
Plants (Botany).

27-2664

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Deserts.
Tundra vegetation.
Forest tundra.

28-1262

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30-444

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Tundra vegetation.
Plant ecology.
Ecosystems.

28-1263

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Plant ecology
Taiga vegetation
Taiga soils

28-1671

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Plant ecology
Taiga soils.

28-366

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Subarctic soils
Subarctic vegetation

28-3750

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30-2297

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USSR-Bol'Shaya Zemlya

Tundra soils
Tundra vegetation
Soil formation
26-1710

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30-1563

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30-682

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25-1105

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Organic soils.

27-2682

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Podsol

Meadow soils

USSR--Primorskiy Kray

26-3817

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Soil moisture migration

26-3849

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Taiga soils
Taiga vegetation

28-2507

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Alpine soils.
Alpine vegetation.
Plant ecology.
USSR--Transcaucasia.
28-731

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Taiga
Forest tundra
USSR--Tyumen'

28-2599

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29-3664

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Meadow soils
Soil moisture
Soil composition

28-3474

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Tundra soils
Cryogenic soils

28-4110

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30-676

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Taiga soils.
Taiga vegetation.
Biomass.

28-416

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29-1064

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Tundra soils
Tundra vegetation
Tundra terrain

26-1797

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Tundra soils.
Tundra vegetation.

28-346

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Tundra soils.
Soil profiles.
Soil formation.

28-602

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Forest tundra.
Tundra soils.
Tundra vegetation.

26-1708

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Tundra soils.
USSR--ARY-MAS.

27-2671

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27-1543

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Forest tundra.
Tundra soils.
Soil profiles.

28-1305

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Soil patterns
Tundra soils
Patterned ground

28-2866

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Tundra vegetation.
USSR-ARY-MAS.

27-2670

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30-148

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Forest ecosystems

28-1933

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29-1611

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Plant ecology.
Taiga soils.

28-323

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Tundra vegetation.
Ecology.

26-656

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Tundra soils.
Tundra vegetation.

2

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USSR-Chukotskiy Poluostrov.

26-1699

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Mountain soils.
Alpine vegetation.
Plant ecology.
USSR--Verkhoyansk.
USSR--Kolyma

27-19

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Arctic vegetation
Plant ecology
Arctic soils

28-2233

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Arctic vegetation
Plant ecology
Arctic soils

28-2234

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30-1950

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Arctic vegetation
Tundra vegetation
Plant ecology

28-1678

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29-500

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29-3679

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Soil formation

Podsol

Forest soils

Meadow soils

USSR-Amur River

USSR--Primorskiy Kray

26-3816

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Composition of the soil solution in the West Taimyr tundra soils. International biological programme, tundra biome; proceedings IV. International meeting on the biological productivity of tundra, Leningrad USSR, October 1971. Edited by F.E. Wielgolaski and Th. Rosswall. Stockholm, tundra biome steering committee. April 1972. p. 233-235.

Tundra soils.

Soil composition.

27-2686

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NAL/CAIN

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NAL/CAIN

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Arctic soils.

Tundra soils.

26-1706

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NAL/CAIN

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Tundra soils

Tundra vegetation

Active layer

26-1724

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Alpine soils
Alpine vegetation

28-3059

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Mountain soils
Forest soils
Podsol
USSR--Sakhalin Island
USSR--Kuril Islands

26-3823

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Role of cryogenic factors in soil formation in the Far East. (Rol' kriogennykh faktorov v pochvoobrazovanii na Dal'nem Vostoke) *Vsesoiuznyi simpozium po biologicheskim problemam Severa*, 5th, Magadan, Apr. 18-22, 1972. *Pochvy i rastitel'nost' merzlotnykh raionov SSSR* (Soil and vegetation of permafrost regions in the USSR) p. 24-28. In Russian with English summary. 3 refs.

30-675

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Peat
Soil formation
Soil profiles

28-3484

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Alpine vegetation
Mountain soils
Soil moisture migration

28-3800

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Soil composition.

28-1279

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Peat.
Soil composition.
Soil formation.

27-131

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Vegetation factors
Taiga vegetation

28-2151

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Taiga vegetation
Vegetation patterns

28-2150

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Soil moisture migration.

28-1022

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Active layer
Vegetation factors
Tundra soils

28-2848

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Arctic soils
Arctic vegetation
Plant ecology

26-2533

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Acid illuvial-gley soils of west Siberian middle and northern taiga. Pochvovedenie, 3: 3-18. In Russian.

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Tundra vegetation.

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Tundra soils.
Biomass.

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Tundra vegetation
Plant ecology
USSR--Magadan

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Tundra soils
Forest tundra

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Plant ecology

Tundra vegetation

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Alpine vegetation
Plant ecology

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Plant ecology.
USSR-Sayan Mountains.

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Taiga soils

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Soil profiles
Tundra vegetation

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Tundra vegetation.

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Ecology.

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Forest tundra.
Tundra soils.

28-203

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Subarctic vegetation

28-3743

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Plant ecology.

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Subarctic soils

Patterned ground

26-2503

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Tundra soils

Plant ecology

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Alpine vegetation

USSR--Taymyr

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Taiga vegetation.

28-114

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USSR--Ural Mountains

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Forest soils
Soil formation
USSR--Ural Mountains

26-1867

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Taiga vegetation

26-1872

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Tundra vegetation.

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Alpine vegetation

Plant ecology

USSR--Yenisey River

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27-1735

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Vegetation patterns

Taiga vegetation

28-1931

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Alpine vegetation.
Plant ecology.

27-1786

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NAL/CAIN

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29-2114

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Tundra vegetation.
Plant ecology.
USSR--Ural Mountains.

27-526

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26-1055

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Vegetation patterns.

28-121

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Soil formation.

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USSR--Novosibirsk.

27-1772

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Clays.
Sands.

28-1129

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Taiga vegetation
Geobotanical interpretation

28-3529

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Arctic soils
Subarctic soils
Soil moisture migration

26-2506

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30-147

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Taiga.
USSR--OMSK.

27-1784

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28-1071

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Peat.
Vegetation.
Plant ecology.

28-415

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Ecosystems.

26-460

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Arctic soils
Subarctic soils
Tundra soils

26-2505

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Tundra soils.
Soil formation.
Soil profiles.

28-202

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Taiga vegetation.
Forest tundra.
Plant ecology.

28-1258

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Meadow soils
Vegetation
Soil moisture

28-1934

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Plant ecology.
Tundra soils.

28-1304

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Taiga soils.
Taiga vegetation.
Plant ecology.
USSR--Yakutia.

27-878

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Forest tundra.
Trees(plants).

27-2688

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Alpine vegetation.
Plant ecology.
USSR--Pamirs

27-133

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Alpine vegetation.

28-1474

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Alpine soils.

Alpine vegetation.

Tundra vegetation.

USSR-Baykal Lake.

27-2544

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30-674

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Cryogenic soils

Soil formation

USSR--Taymyr

28-3808

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Alpine vegetation.

Forest ecosystems.

26-937

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NAL/CAIN

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Taiga vegetation

Forest ecosystems

Soil composition

USSR--Tavda

28-2668

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Relation between long-term dynamics of seasonal ground thawing and the variations in soil moisture before winter (Zavisimost' mnogoletnei dinamiki sezonnogo protaivaniia gruntov ot izmenenii ikh predzimnei vlazhnosti). Merzlotnye issledovaniia, 1973, Vol. 13, p. 110-115. In Russian. 5 refs. Minailov, G. P.

Soil moisture

28-2548

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Tundra vegetation.

Tundra soils.

Forest tundra.

USSR--Ural Mountains.

28-732

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Alpine soils

Alpine vegetation

Plant ecology

28-1980

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Forest ecosystems

Vegetation patterns

Lichens

28-2153

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NAL/CAIN

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NAL/CAIN

(Lockheed)

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NAL/CAIN

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NAL/CAIN

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Deserts

Desert soils

Soil formation

USSR--Tien Shan

28-2280

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NAL/CAIN

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25-2959

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Forest tundra
plant ecology
Tundra vegetation

28-2756

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Humus-illuvial soils of tundra and forest tundra in the Kola Peninsula (Gumuso-illuvial'nye pochvy tundry i lesotundry Kol'skogo poluostrova) Akademiya nauk S.S.R. Komi filial. Institut biologii. Biologicheskie osnovy ispol'zovaniya prirody Severa (Biological basis for the utilization of natural resources in the North) syktyvkar, Komi knizhnoe izd-vo, 1970 p. 129-134. In Russian. 10 refs.

Forest tundra.
Tundra soils.
Tundra vegetation.
USSR-Kola Peninsula.
26-1712

Manakov, K.N., 1972:

Productivity and biological turnover in the tundra biogeocoenoses of the Kola Peninsula (Produktivnost' i biologicheskii krugovorot v tundrovyykh biogeotsenozakh kol'skogo poluostrova) Leningrad, Nauka, 148 p. In Russian with abridged English table of contents enclosed. Refs. p. 142-147.

30-254

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Moisture migration and thermal cycles in freezing ground (Migratsiya vlagi i teplooboroty v promerzaiushchem grunte). Problemy geokriologii (Problems in geocryology). Novosibirsk, Nauka, 1973 p. 70-77. In Russian. 10 refs.

Active layer.
Soil moisture migration.

28-1377

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Alpine soils.
Alpine vegetation.
Vegetation patterns.

28-123

Mart'ianova, G.N., 1976:

Optimal utilization of steppe geosystems subject to prolonged seasonal freezing. Symposium on Environmental Protection in Relation to Economic Development of Permafrost Regions. CRREL TL 518, p. 19-20.

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Arctic vegetation.
Lichens.
Biomass.

26-1704

Martynenko, V.A., 1973:

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Taiga soils
Taiga vegetation
Forest tundra

28-4252

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A brief essay on the vegetation in the vicinity of the Taymyr Biogeocoenological Station. International Tundra Biome translation Jan. 1975 no. 13. 51 p. Translated from Biogeocoenoses of Taymyr and their productivity. Vol. 2. Leningrad, Nauka, 1973, p. 7-49. Refs. p. 49-51. For Russian original see 28-4109.

Tundra vegetation
Plant ecology

BROWN

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28-53

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Subarctic soils

Subarctic vegetation

28-3754

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Arctic vegetation.

Plant ecology.

28-368

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Tundra soils

Soil formation

Tundra vegetation

28-4111

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27-1544

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Tundra soils
Soil formation
Soil profiles

28-4112

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Thermokarst.
Active layer thickness.
Vegetation factors.

28-1249

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Taiga terrain.
Forest tundra.
Cryogenic processes

28-1275

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30-673

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Active layer.

28-1019

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Active layer thickness.

28-1376

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Mountain soils
Forest soils
Vegetation
USSR--Ural Mountains

26-1869

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Typical morphological landscape structures in the central taiga of the Russkaia ravnina (Tipologiya morfologicheskikh struktur landshaftov podzony srednei taigi Russkoi ravniny). Leningrad. Universitet. Uchenye zapiski. Seriya geograficheskikh nauk, 1971, 21(358). In Russian. 7 refs.

Taiga soils.
Taiga vegetation.
Plant ecology.

28-506

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Vegetal mass of the tundras of western Taymyr. International Tundra biome. translation April 1971 No. 3. 5p. Translated from Vestnik Moskovskogo. Universiteta, No. 5: 62-67, 1969. 4 refs.

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Tundra soils.
Lichens.

26-658

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Vegetation patterns
Forest ecosystems
Forest soils

28-1932

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Cryogenic soils.
Soil formation.

26-1718

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30-692

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Thermal regime of supersaturated soils in the lower Amur River plains (Temperaturnyi rezhim pereuvlazhennnykh pochv Nizhneamurskikh nizmennostei). Prirodnye osobennosti bolot Priamur'ia (Natural characteristics of swamps in the Amur River area). Novosibirsk, Nauka, 1973, p. 113-122. In Russian. 6 refs. Prozorov, I.U.S.

Active layer
Soil temperature

28-3488

Petrov, M.F., 1972:

Cedar cultivation in Karelskaya ASSR (Kul'tury kedra sibirskogo v Karel'skoi ASSR). Akademiia nauk SSSR. Vsesoiuznoi botanicheskoe obshchestvo. Kedr sibirskii na evropeiskom severe SSSR ego rasprostranenie, vozobnovlenie i kul'tura. Leningrad, Nauka, 1972, p. 53-58. In Russian, 7 refs.

Forest soils.
Plant ecology.

28-131

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Arctic soils
Arctic vegetation
Photosynthesis

26-3697

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Arctic soils.

Arctic vegetation.

USSR-Wrangel Island.

26-461

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Arctic vegetation.

Plant Ecology.

USSR-Wrangel Island.

27-2051

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Forest tundra.

Plants (Botany).

27-2667

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Peat

USSR--Karelia

28-3747

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Alpine soils
USSR--Tien Shan

28-4212

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27-1550

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29-1212

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Peat

28-3486

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Peat

28-3487

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NAL/CAIN

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Tundra vegetation.
Tundra soils.
Thermal regime.
USSR-Taymyr

26-133

Pospelova, E.B. et al., 1973:

Effect of vegetation on thermal regime of tundra soils in West Taymyr. U.S. Army Cold Regions Research and Engineering Laboratory, Aug. 1973, TL 378, 6 p. AD-766 593. For Russian text see 26-0133. 9 refs. Zharkova, I.U.G.

Soil temperature
Tundra soils
Vegetation factors

28-1661

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Flora in the overgrowing damaged areas of the Berelekh River valley in the Magadan region (K voprosu o flore zarastaiushchikh narushennykh uchastkov doliny reki Berelekh (Magadanskaia oblast')) Vsesoiuznyi simpozium po biologicheskim problemam Severa, 5th, Magadan, Apr. 18-22, 1972. Pochvy i rastitel'nost' merzlotnykh raionov SSSR (Soil and vegetation of permafrost regions in the USSR) p. 180-184. In Russian with English summary. Tishkov, A.A. 30-695

Pospelova, E.B., 1972:

Plant cover and phytomass of the basic plant communities at the "Agapa" station (Rastitel'nykh pokrov i fiomassa osnovnykh rastitel'nykh soobshchestv statsionara "Agapa") Pochvy i produktivnost' rastitel'nykh soobshchestv. Vyp. 1 (Soils and productivity of plant communities. Vol. 1) Moscow, MGU, p. 55-79. In Russian. 17 refs. Zharkova, I.U.G.

27-1228

Pospelova, E.B., 1974:

Structure and biomass distribution in main vegetation associations at Agapa station (Struktura i prostranstvennoe raspredelenie rastitel'nykh soobshchestv statsionara "Agapa") Pochvy i produktivnost' rastitel'nykh soobshchestv. Vyp. 2 (Soils and productivity of plant associations. Vol. 2) Moscow, MGU, p. 48-66. 6 refs. In Russian.

29-3325

Pospelova, E.B., 1972:

Vegetation of the Agapa Station and productivity of the main plant communities. International biological programme, tundra biome; Proceedings IV. International meeting on the biological productivity of tundra, Leningrad USSR, October 1971. Edited by F.E. Wielgolaski and Th. Rosswall. Stockholm, tundra biome steering committee, April 1972. p. 204-208.

Tundra vegetation.

Plants (Botany).

Biological productivity.

27-2680

Pospelova, E.B., 1971:

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Tundra soils.

Tundra vegetation.

Biomass.

26-641

Pozdnyakov, L.K., 1975:

Productivity of forests of Siberia. Resources of the biosphere (synthesis of the Soviet studies for the International Biological Programme) Vol. 1. Leningrad, Nauka, p. 43-55.

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Priazhnikov, A.N., 1971:

Phytoncid productivity of vegetative components of cedar forests (Fitontsidnaia produktivnost' rastitel'nykh komponentov kedrovyykh lesov). Akademiia nauk SSSR. Sibirskoe otdelenie. Biologicheskii institut. Trudy po lesnomu khoziaistvu Zapadnoi Sibiri. 1971, Vol. 9, p. 98-115. In Russian. 28 refs. SD95.A6

Vegetation patterns.

Alpine vegetation.

Alpine soils.

28-120

Pridnia, M.V., 1972:

Natural forest regeneration of spruce including hylocomium, dicranum, and rhytidiadelphus in areas of concentrated logging in the Tavda-Konda interfluvium (Estestvennoe lesovozobnovlenie na kontsentrirovannykh vyrubkakh el'nikov zelenomoshnikovyykh Tavda-Kondinskogo mezhdurech'ia). Akademiia nauk SSSR. Ural'skii nauchnyi tsentr. Institut ekologii rastenii i zhivotnykh. Trudy, 1972, Vol. 83, p. 194-216. In Russian. 41 refs.

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Taiga vegetation

Forest ecosystems

USSR--Tavda

28-2670

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Active layer.

Soil moisture migration.

Cryogenic processes.

28-1369

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29-3225

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29-3226

Productivity of Subarctic biogeocoenoses (Produktivnost' biogeotsenozov Subarktki). Simpozium po izucheniiu, ratsional'nomu ispol'zovaniu i okhrane vosproizvodimyykh prirodnnykh resursov Krainego Severa SSSR. Sverdlovsk, 1970, 246 p. In Russian with English table of contents enclosed. Proceedings of a Symposium on exploration, rational exploitation, and preservation of natural resources in far northern U.S.S.R. Akademiia nauk SSSR. Ural'skii filial.

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Productivity of Subarctic biogeocoenoses, 1970

Forest tundra
Tundra vegetation
Soil formation
Soil moisture migration

26-3076

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Agrochemical characteristics of soils in the Kamchatka region (Agrokhimicheskaiia kharakteristika pochv Kamchatskoi oblasti). Agrokhimicheskaiia kharakteristika pochv SSSR. Dal'nii Vostok. Moscow, Nauka, 1971, p. 170-239. In Russian. 42 refs. Sokolov, I.A.

Soil formation
Soil composition
Podsol
USSR--Kamchatka peninsula

26-3821

Proskuriakova, T.L. et al., 1972:

Soil temperature during autumn and winter and its dependence on limiting factors (Temperatura pochvy v osenne-zimnii period i ee zavisimost' ot obuslovlivaiushchikh faktorov). Proskuriakova, T.L., et al. Leningrad. Gosudarstvennyi gidrologicheskii institut. Trudy, 1972, Vol. 194, p. 155-164. In Russian. 18 refs. Sokolova, N.V.

Soil temperature.
Soil moisture migration.

28-744

Prozorov, I.U.S., 1973:

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Soil formation
Peat
Vegetation

28-3481

Prozorov, I.U.S., 1974:

Swamps of the plains near the lower Amur River (Bologa nizhnemurskikh nizmennostei) Novosibirsk, Nauka, 211 p. In Russian with abridged English table of contents enclosed. Refs. p. 205-210.

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Taiga soils.
Soil formation.

28-142

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Taiga vegetation.
Plant ecology.

27-2324

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Ecosystems.
Plant ecology.

28-1265

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Tundra vegetation
Plant ecology
Tundra soils

28-4228

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Soil moisture migration.

28-1083

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Plants (Botany).

26-657

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29-3666

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Taiga vegetation
Forest ecosystems
Taiga soils
USSR--Tavda

28-2667

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Taiga vegetation
Plant ecology

28-1669

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29-3799

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Soil moisture migration
USSR--Novosibirsk Archipelago

28-3807

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Tundra vegetation
Taiga vegetation

28-2700

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Plant ecology.

Taiga soils.

Damage.

27-1693

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Tundra soils.

Tundra vegetation.

Soil moisture migration.

27-869

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Tundra vegetation.

27-2666

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senozakh vostochnogo sklona Poliarnogo U-
rala pri nekotorykh inzhenernykh voz-
deistviakh) Biologicheskie problemy Sev-
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ero-Vostoke) Vsesoiuznyi simpozium po
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Alpine vegetation.

Plant ecology

USSR-Issyk-Kul Lake.

USSR-Tien Shan.

27- 2638

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Mountain soils

Alpine vegetation

Tundra soils

USSR--Altay Mountains

26-1921

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Natural flora of Siberia used in landscaping
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Arctic soils

Arctic vegetation

Plant ecology

28-3929

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Tundra.
Forest tundra.
Taiga.

28-1595

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Taiga soils.
Soil moisture migration.

26-924

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30-671

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29-1987

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29-3761

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NAL/CAIN

(Lockheed)

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30-677

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Taiga soils.
Vegetation.

27-877

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Tundra vegetation.
Ecosystems.

26-1056

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Tundra soils.
Tundra vegetation.
Soil formation.

26-1715

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Tundra vegetation.
Fungi.

27-2677.

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27-1547

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Alpine vegetation
Plant ecology
Alpine soils

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Soil formation.
Soil moisture migration.

27-1736

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Tundra terrain
Tundra soils
USSR--Kola Peninsula

28-3748

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Tundra soils.
Forest tundra.
Tundra vegetation.

28-1245

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29-3669

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Alpine vegetation.
Plant ecology.

27-2630

Sumochkina, T. E., 1971:

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Mountain soils.
Soil moisture.
Soil temperature.

27-2632

Sumochkina, T. E. et al., 1971:

Observing phases of development and the height of mountain pasture plants. K metodike nabliudeniia za fazami razvitiia i vysotoi pastbishchnykh rastenii v gornyykh usloviakh. Tashkend. Sredneaziatskii nauchnoissledovatel'skii gidrometeorologicheskii institut. Trudy 1971 55(70). p. 13027. In Russian. 12 refs. Gringof, I. G. QC851.T28.

Alpine Vegetation
Alpine soils.

27-2629

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Productivity of fodder crops introduced in the forest tundra (o produktivnosti kormovykh kul'tur introdutsiruemyykh v lesotundre) Biologicheskii problem Severa, VI simpozium, Vypusk 4 (Biological problems of the North, 6th symposium, Vol.4) Yakutsk, Akademiia nauk SSSR, p. 101-104. In Russian.

29-3668

Sushkina, N.N. et al., 1972:

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Subarctic soils
Alpine soils
Alpine vegetation
USSR--Pamirs

26-3695

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Plant ecology.
Peat.

23-70

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Taiga soils.
Taiga vegetation.

28-115

Talantsev, N.K., 1973:

Sources of seeding and their role in forest regeneration. *Lesn Khoz*, 10: 44-45. In Russian.

NAL/CAIN

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Taiga soils.
Taiga vegetation.
Plant ecology.

28-118

Taran, I.V., 1973:

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Forest ecosystems
Subarctic vegetation
Subarctic soils

28-1930

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NAL/CAIN

Targul'ian, V.O., 1971:

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Tundra soils
Taiga soils
Soil formation

26-2715

Tatarchenkov, M.I., 1971:

Review of research on the vegetation of the northeastern U.S.S.R. (Istoriia izucheniia i sostoianie issledovaniia flory i rastitel'nosti severo-vostoka SSSR). *Akademiia nauk SSSR. Dal'nevostochnyi tsentr. Severo-vostochnyi kompleksnyi institut. Trudy*, 1971, Vol. 42, p. 158-173. In Russian. 100 refs.

Arctic vegetation
Plant ecology
Arctic soils

28-1842

Tatarkina, A.A., 1972:

Soils of the agricultural areas in the Magadan region (Pochvy zemledel'cheskikh raionov Magadanskoi oblasti) *Vsesoiuznyi simpozium po biologicheskim problemam Severa*, 5th, Magadan, Apr. 18-22, 1972. *Pochvy i rastitel'nost' merzlotnykh raionov SSSR* (Soil and vegetation of permafrost regions in the USSR) p. 63-66. In Russian with English summary. 12 refs.

30-680

Tikhmenev, E.A. et al., 1973:

Anthecological studies of grasses in Arctic tundras of Wrangel Island (K antekologii zlakov arkticheskoi tundry ostrova Vrangeliia). *Botanicheskii zhurnal*, Oct. 1973, 58(10), p. 1474-1484. In Russian. 17 refs. Levkovskii, V.P.

Tundra soils
Tundra vegetation
Plant ecology

28-2230

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Plant ecology
Arctic vegetation

28-1677

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Tundra soils
Tundra vegetation

26-1949

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Forest ecosystems.
Taiga vegetation.

27-1827

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Tundra vegetation.
Plant ecology.

28-1246

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Ecology
Plants (botany)

28-2994

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Tundra terrain.
Tundra soils.

27-2636

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Tundra vegetation.
Plant ecology.

27-306

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Tundra vegetation
Plant ecology

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Ecosystems.

27-2661

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Plant ecology.
Arctic soils.

28-1255

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Alpine vegetation.
Plant ecology.
USSR--Dzhungarskiy Alatau

28-734

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Vegetation patterns.
Alpine vegetation.

28-124

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Arctic vegetation
Plant ecology

26-3874

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Arctic vegetation
Plant ecology

28-4226

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Plant ecology
Subarctic soils

28-1675

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Forest tundra
USSR-Bol'shaya Zemlya

28-2566

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Plant ecology.
Arctic soils.

28-1259

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Patterned ground.
Thermokarst.

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Soil formation.
Taiga soils.

26-1711

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Tundra.
USSR-Far North.

27-2610

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Tundra vegetation.
Biomass.

27-2353

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Clay soils
Soil composition
Soil profiles

28-2542

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Taiga vegetation.

27-2325

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Tundra soils.
Soil composition.

26-1714

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Tundra vegetation.
Forest tundra.

28-1038

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Tundra terrain.
Tundra soils.
Active layer.

28-271

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28-1250

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Tundra soils
Tundra vegetation

26-1722

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Alpine vegetation.
Plant ecology.

27-2196

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Plant ecology.
Alpine soils.
USSR--Tien Shan.

28-1286

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Alpine soils
Alpine vegetation

26-3398

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Plant ecology.
Ecosystems.

28-1267

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Arctic terrain
Tundra
Thermokarst

28-1961

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Lichens.
Photosynthesis.

28-39

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Taiga soils
Taiga vegetation

28-2508

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Taiga vegetation

28-3742

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Alpine soils.

Plant ecology.

27-2343

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Tundra vegetation.

Soil composition.

USSR-Taymyr.

27-2345

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Tundra vegetation

Soil formation

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Biological productivity.

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Soil temperature.

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Soil temperature
Alpine soils

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Soil profiles.

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Soil moisture migration.

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Tundra vegetation.
Biomass.

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Lichens.

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Plant ecology
Biomass

USSR--Komi ASSR

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Vegetation
USSR-Karelia

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Photosynthesis.

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Tundra soils
Tundra vegetation.

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USSR--Khibiny Mountains

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Mosses

Tundra soils

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Arctic vegetation.

Vegetation patterns.

USSR--Franz Josef Land.

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Soil moisture migration

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Soil formation.

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Vegetation

Plant ecology

Tundra soils

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Forest ecosystems

Vegetation patterns

Soil composition

28-2152